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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kazunari Domen

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EXAMINER

SMITH, JENNIFER A

ART UNIT

PAPER NUMBER

1793

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/533,567	Applicant(s) DOMEN ET AL.	
	Examiner JENNIFER A. SMITH	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,12 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,12 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Application

Claim 1 has been amended.

Claims 2, 4, 6-9, 11, and 13-14 have been canceled.

Claims 1, 3, 5, 10, and 12 are presented for examination.

Withdrawal Objections to the Drawings

The objections to the drawings are withdrawn because the reference characters "1-3" in Fig. 1 and Fig. 2 do not relate to the same part of an invention.

Withdrawal of Claim Rejections - 35 USC § 103

The rejections of claims 3, 5, 10, and 12 under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (CSJ, 2002) in view of Takagaki et al. (2002) are withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (CSJ, 2002) in view of Takagaki et al. (2002).

In regard to claim 1, Yoshida et al. teaches a metal oxide catalyst HTiNbO_5 . The Ti/Nb atomic ratio (z) in this case is 1. “x” and “y” are both 1.

Takagaki et al. teaches catalyst composition of $\text{H}_{0.9}\text{Ti}_{0.9}\text{Nb}_{1.1}\text{O}_5$ in Section 3, Results and conclusion. The Ti/Nb atomic ratio (z) in this case is 0.818. “x” is 09 and “y” is 1.1.

Yoshida et al. do not describe a catalyst in which “z” has a value between 1.2 and 1.4.

It would have been obvious to one of skill in the art, at the time of Applicants invention, to modify this ratio because investigation of changes in catalytic activity associated with changes in atomic ratios has been conducted in the past [See the Introduction of Takagaki]. This is a design parameter that can be set appropriately by a person skilled in the art, when necessary, and limiting those design parameters to optimum ranges involves no particular difficulty. Optimizing the preferred numerical

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ranges of x, y, and z, and restricting them to the ranges of the instant claims as in the Yoshida and Takagaki references demonstrates the normal inventive capacity of one skilled in the art.

Claim 1 contains process limitations in a composition claim – as such, they are given little weight. The claimed product appears to be the same or similar to that of the prior art, although produced by a different process. The burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. See *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

In regard to the amended feature of claim 1 - the limitation to the ranges of the Ti/Nb ratio - the Takagaki reference still discloses the relationship between the Ti/Nb ratio and the structural features and acidic properties of the catalyst [See Takagaki, 2nd Paragraph]. It is within the level of one of skill in the art to adjust this ratio to reach a level of desirable acidity when used as a catalyst in ester reactions [See Paragraph 1.]

In regard to claim 3, Yoshida et al. also teaches the organic ammonium used in the catalyst production process to be tetrabutylammonium. Claim 3 contains process limitations in a composition claim – as such, they are given little weight

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Claim 10 is drawn to an ester dehydration condensation catalyst comprising the catalyst of claim 3. Claim 10 is obvious over the prior art of record – Yoshida, Takagaki, Takagaki et al., in Section 3, teaches a higher activity in esterification reaction with the titanium niobate oxide sheet aggregate than with zeolite or hydrous niobic acid. Takagaki also gives motivation to modify the invention saying when the composition of HTiNbO_5 is changed, acid catalytic activity is changed along with the change of composition.

Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (CSJ, 2002) in view of Takagaki et al. (2002) and further in view of Hara et al. (2002).

In regard to claim 5, Hara et al., in Section 2, teaches preparation of the catalyst HTiNbO_5 in an aqueous solution of tetrabutylammonium and with a 0.1M solution of nitric acid. The nano-sheet material has 150 times larger surface area of $150 \text{ m}^2/\text{g}$ compared with that of before removal. Claim 5 contains process limitations in a composition claim – as such, they are given little weight.

Claim 12 is drawn to an ester dehydration condensation catalyst comprising the catalyst of claim 5. Claim 12 is obvious over the prior art of record – Yoshida, Takagaki,

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and Hara. Takagaki et al., in Section 3, teaches a higher activity in esterification reaction with the titanium niobate oxide sheet aggregate than with zeolite or hydrous niobic acid.

Response to Arguments

Applicant's arguments with regard to claim 1, filed on 05/01/2008, have been fully considered but they are not persuasive.

Applicant argues that the references do not provide any suggestion or motivation to make the presently claimed limitation of “a Ti/Nb atomic ratio z of $1 < z < 1.4$ ” and that the claimed ratio in the range of $1 < z < 1.4$ was found to unexpectedly improve the amount of ethyl acetate formed. Also, Applicant argues the ratio of Ti/Nb (which is not an integer) was not previously known to be a design parameter, as claimed, was not previously known to be a design parameter.

Takagaki characterized that the ratio of Ti and Nb indicates strong activity in reactions with esters. The effect of altering the ratio is taught in Paragraph 2 and while the Takagaki and Yoshida reference do not explicitly teach this numerical ratio, Takagaki teaches the structure HTiNbO_5 and altering the structure to investigate catalytic properties [See Introduction]. Therefore, one of skill in the art would recognize this ratio as a design characteristic in determining optimal catalytic activity.

Applicant argues the rejected claims 3, 5, 10, and 12 depend on, or contain the limitations, of claim 1 and the same argument over the rejection set forth to claim 1 is applied.

Conclusion

Claims 1, 3, 5, 10, and 12 are rejected.

No claims are allowed.

THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. SMITH whose telephone number is (571)270-3599. The examiner can normally be reached on Monday - Friday, 8:30am to 5:00pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry A Lorengo/
Supervisory Patent Examiner, Art Unit 1793

Jennifer A. Smith
July 15, 2008
Art Unit 1793

JS